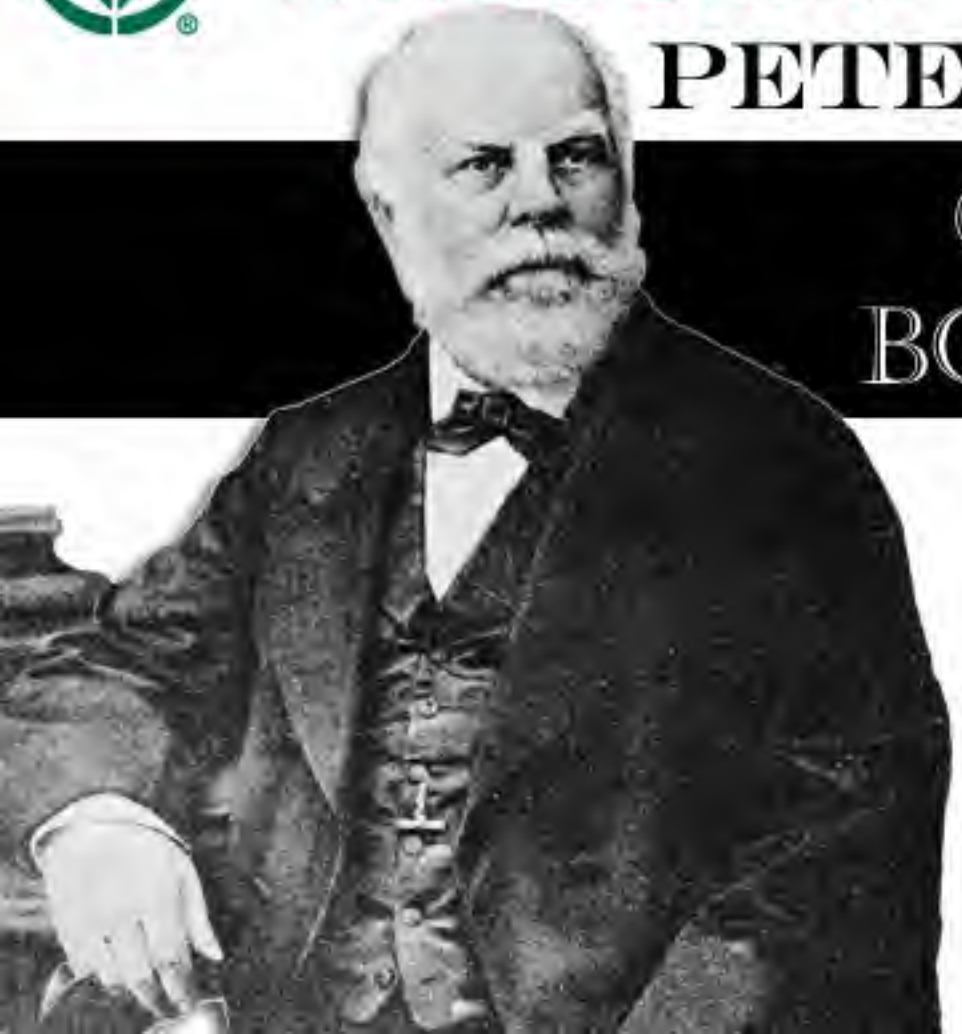
Missouri Botanical Garden
Peter H. Raven Library

George Engelmann Botanical Notebooks



Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

Sept 15 1865

Goetes Braunii Dur

Niagara River

Why distinct from D. echinospora ?

Sept. 2 1865

G. W. Clinton

x60

$\frac{26}{60}$ mm = 0,43 mm

diamt.

$\frac{25.4 - 28.7}{60}$ = 0.42 - 0.48 mm.

exactly the Plant from Lake

Winnipesaukee

MATA

edge of spores

x 153

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13540

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

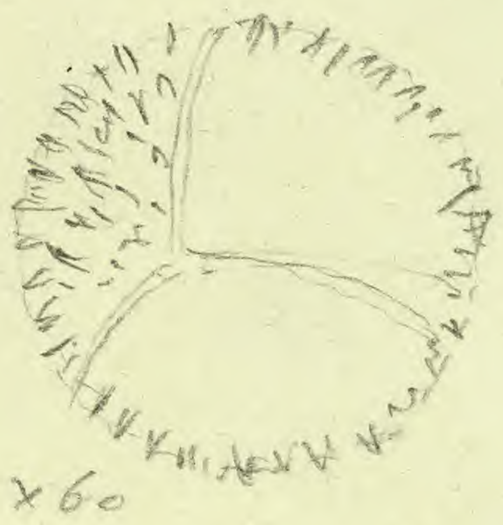
Marble Building Cor. Fourth & Olive Sts. St Louis, Mo.

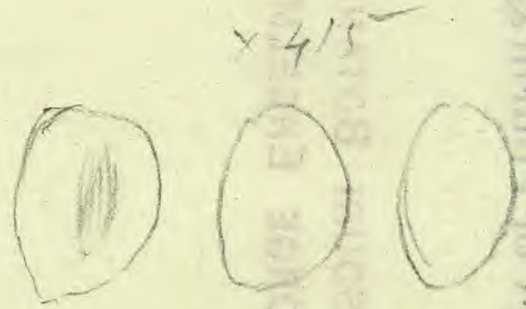
MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Dictyota Binderetii Grev. Sept 16 1866

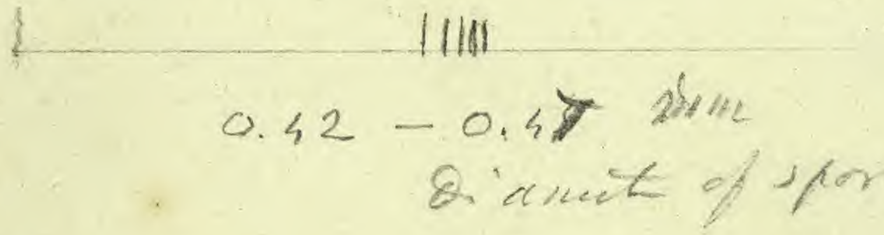
Exp. Locality original specimen from Wm Lobb,
Lake Washington Sept 14th 1856





$\frac{11.5 - 12}{415}$ mm

= 0.028 – 0.029 mm



Diameter of spores

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

18541

ALEX. LEITCH.

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Isoetes Braunii Sept 13. 14 1866

Niagara — J. W. Clinton Sept.

Leaves brownish or reddish green, 10–15 3–4 inches tapering rapidly

Seed of leaf ×10

from base to tip

stomata fewer, larger ×280

Section ×2

horizontal section

Spines ×152

×415

×2

Diameter of spores ×60

mm 10–12/415

0.024 – 0.029 mm

= 0.44 – 0.53 mm. mostly 0.47 – 0.48 mm

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13542

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

copyright reserved
MISSOURI BOTANICAL GARDEN

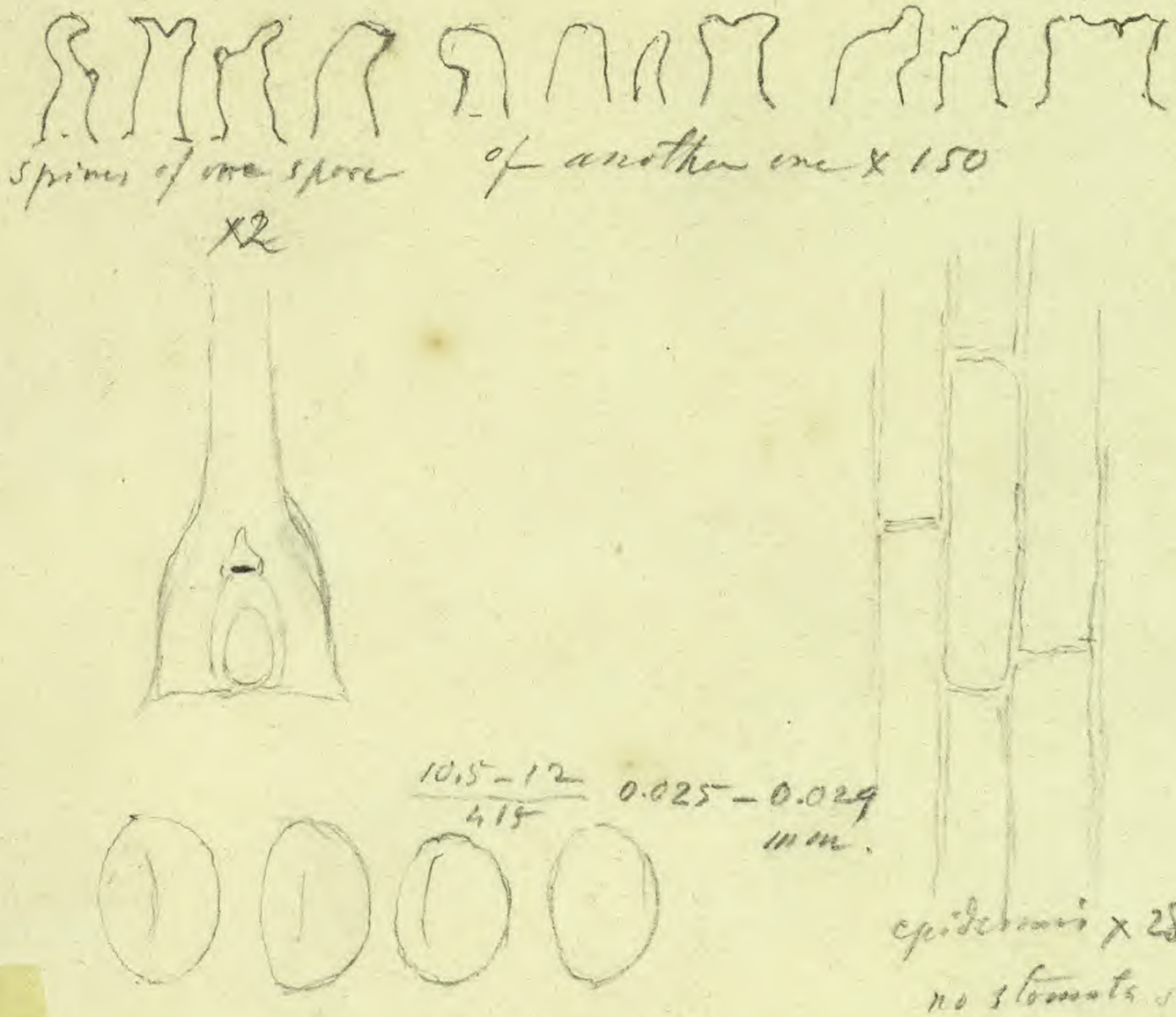
Isoetes Braunii

Nov 9 1866

Echolake, N.H. Sept 12, 1862 Wm Boott

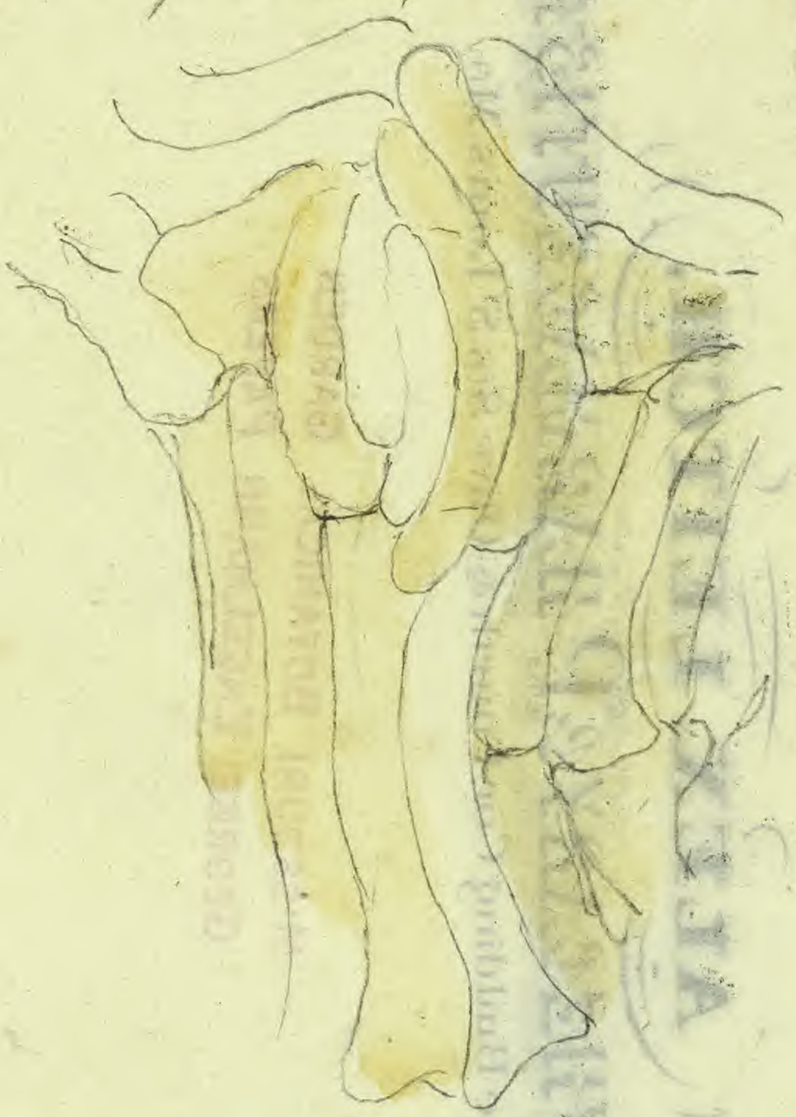
Diameter of Spores x60

25—30 / 60 = 0.42 - 0.50 mm



Spines of one spore x2

of another one x 150



×280 Sporangium

10.5—12 / 415 0.025—0.029 mm.

epidermis x 280

no stomata seen

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13543

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

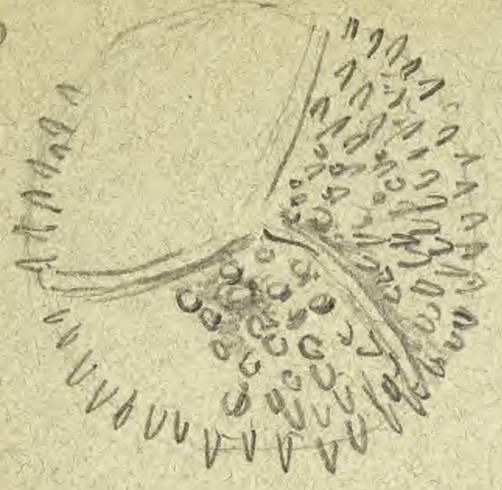
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

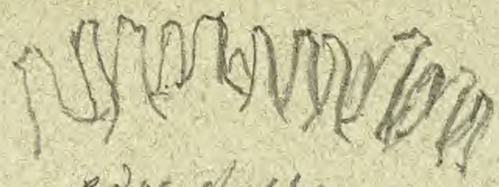
MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Asters, Bruneri Dur. Nov 24 1863

Wiers, N. Hampsh. 1863
H. Mann leg.
nine of 1856 are exactly
equal

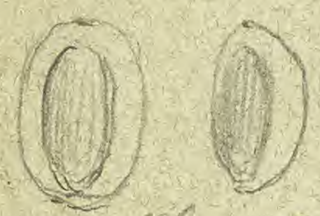




edge of spore
x 153

dry
Contents of Anthemis x415

0.024 – 0.027 mm



immediately after
immersion in water

completely immersed
& soaked.

0.39 – 0.47 mm

Size of spores 1863
x60

$\frac{25 - 28{,}5}{60} = 0{,}42 - 0{,}48$ mm
mostly 0.46 mm

Size of spores of
my specimens 1856

12‴ – 13½‴ mostly 13‴ x60 = 0,20 – 0,22 lin

11 – 13½ lin, mostly
13 lin

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13544

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

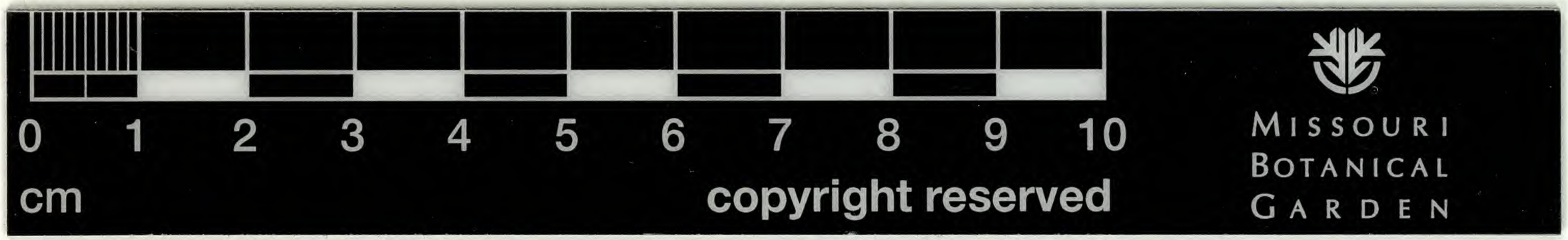
Isoetes Braunii

Lake Winnepesaukee NH. Sept 28 1866

Wm Boott

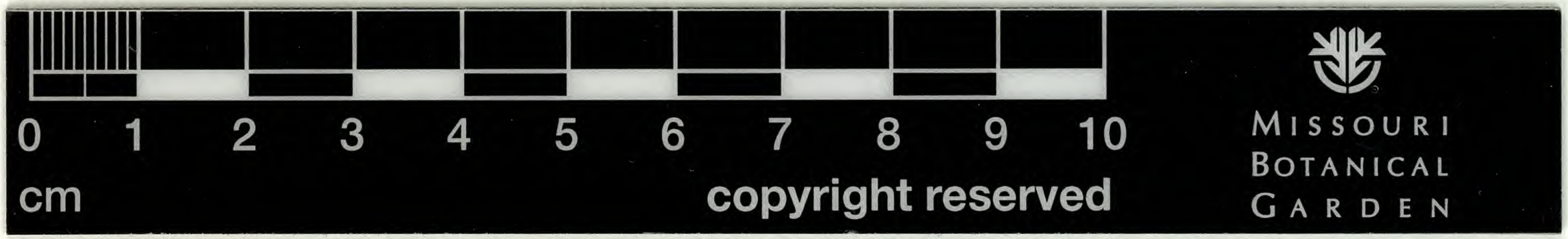
Diameter of Spores ×60

$\frac{27-30.5}{60} = 0.45-0.51$ mm



13545

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

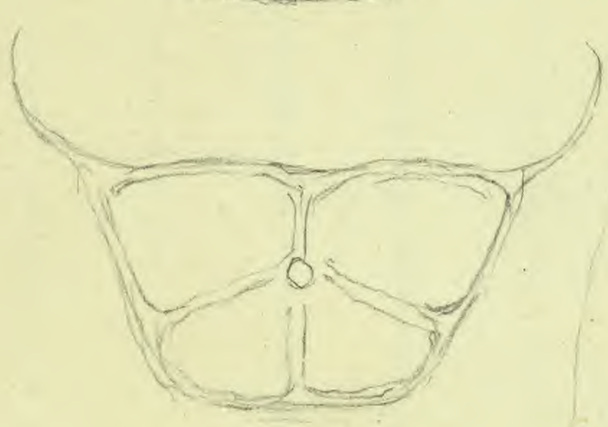


Voodes Braunii

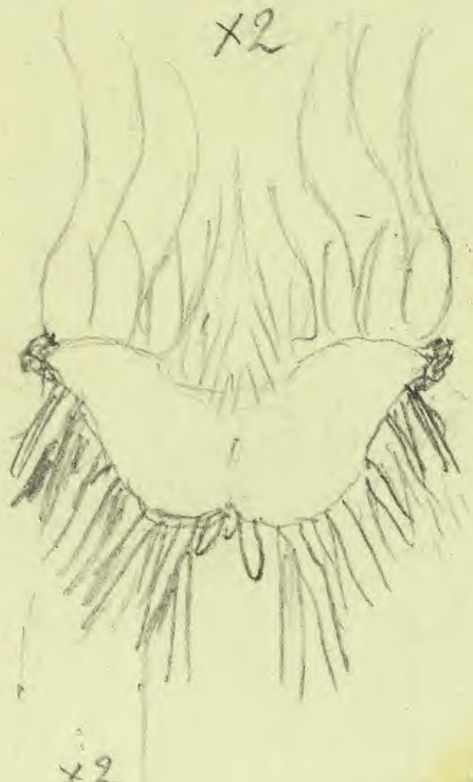
Oct 27 1866

Wm Boott Mystic pond, Oct 21 1866

Sect of leaf ×10



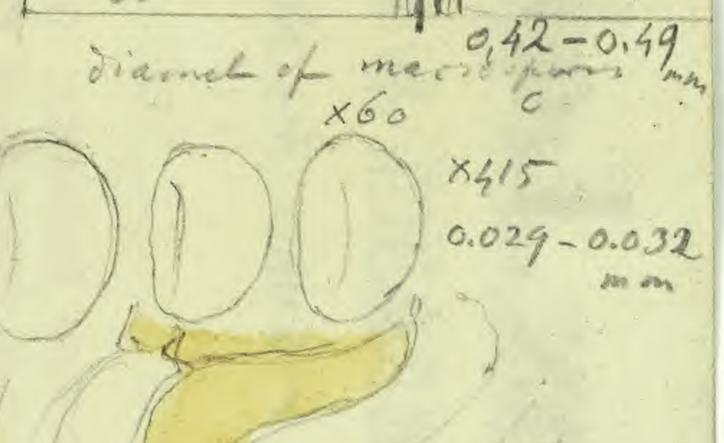
×2



×2

24 cases,
3 inches long
terminal

25 – 29.5 mm
60



0.42 – 0.49 mm
diamet of mature spore
C

×60

×415

0.029 – 0.032 mm

× 280

Sporangi

Epidermis × 280

no Stomata seen

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13546

Alex. Leitch,

APOTHECARY & CHEMIST,

Cor. 4th & Olive Sts., St. Louis.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

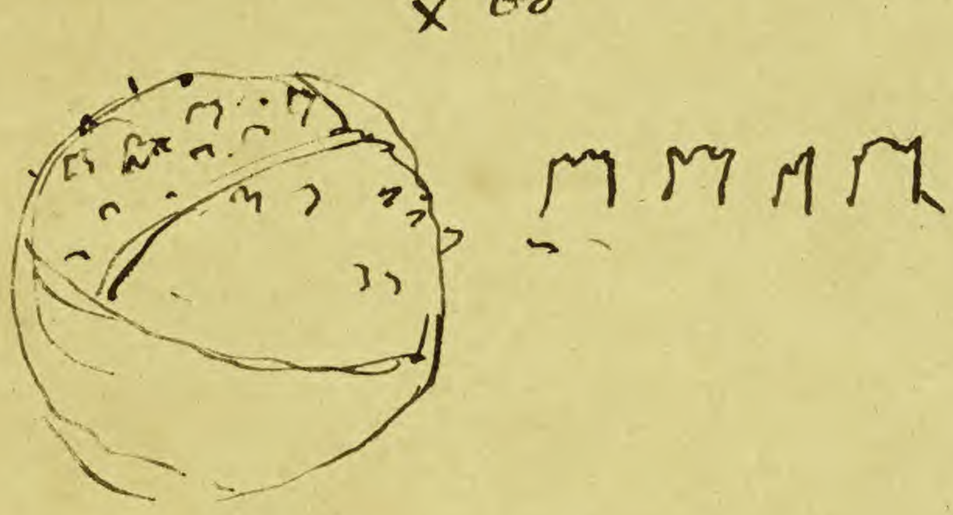
cm 0 1 2 3 4 5 6 7 8 9 10
Copyright reserved
MISSOURI BOTANICAL GARDEN

Sporidesmium Breeanum Apr 1867

forma macrosporis verrucosis, sporulis in cristas hinc inde confluentibus

on Boott — Sept 17 1865 — N 23 H.C. Canby

On stony ground in Thompond in this extremely dry season partly out of water — a mile distant from N 2



plant 2–2½ inches high — heavy slightly reticulated brownish

13547

ENNO SANDER & CO.,

PHARMACEUTISTS,

Cor. 4th & Walnut, under Southern Hotel,

Cor. 2d & Walnut, under Barnum's Hotel,

ST. LOUIS, MO.

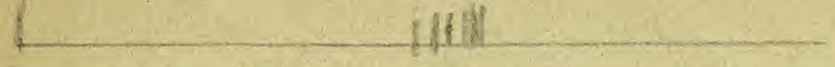
MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

J. Brauniï

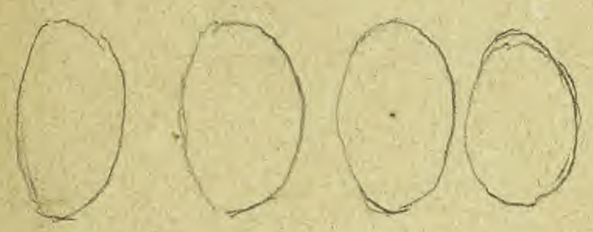
Oct. 6 1866

macrospora, diamet Concord, Mass. H. Mann



24.7 – 29 / 60 = 0.41 – 0.48 mm

folia remota rubello-fuscata sine stomat.



microspora X 415

= 0.027 – 0.029 mm

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13548

ALEX. LEITCH

APOTHECARY & PHARMACEUTIST

COR. 4TH & OLIVE STS. ST. LOUIS

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

0 cm 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Nov 25 1867

Diatoms Boreal
on Batt Mystic Pond July 4 1867

X280

from the tip of
a leaf of a young plant,
3 lines below the end

numerous stomata
short epidermically

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13549

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

copyright reserved
MISSOURI BOTANICAL GARDEN

April 1867

Isoetes Braunii

Wm Boott. Sept 17. 1865 No 2

Exhd. Canby

Sandy bottom of a bay of the Pond
(Horn Pond)

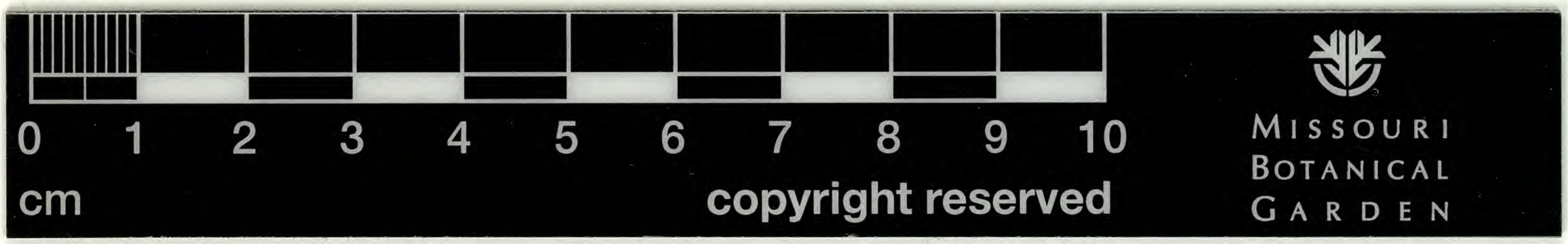
⊢⊣ X415 micrsprs 0.026 – 0.029 mm long

⊢|||||| X60 micrsprs 0.45 – 0.58 mm

regular form of Braunii

"In this extremely dry season the plants were partly out of water"

Plants abt 2 – 2½ inches high, leaves brownish, very ~~slightly~~ recurved.



13550

ENNO SANDER & CO.,

PHARMACEUTISTS,

Cor. 4th & Walnut, under Southern Hotel,
Cor. 2d & Walnut, under Barnum's Hotel,
ST. LOUIS, MO.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

L. Braunii Nov 9 1867

Toms River, Ocean Co., N Jersey

C E Smith 17 Sept 1867

Diam. of macrospores

$\frac{28-31.2}{60} = 0.47-0.52$

15 spores Center Cavity

12-15 cm. Cavity

smooth $\frac{10.6-12}{415} = 0.026-0.029$

MISSOURI BOTANICAL GARDEN
copyright reserved
cm 0 1 2 3 4 5 6 7 8 9 10

13551

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Isoetes Braunii

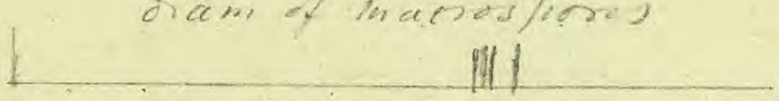
Oct 18 1867

Moosehead or Kennebec River, Maine

Aug 25 1867

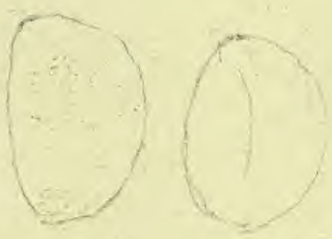
C. E Sm: 74

diam of macrospores



$\frac{28-31}{60}$ = 0.47–0.52 mm

submerged – 15–20 leaves 7–9 cm long, semi-ovate to a fine point, serrate or almost crenulate



$\frac{12-13}{415}$ = 0.029–0.031 mm

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13562

ALEX. LEITCH.

APOTHECARY & PHARMACEUTIST.

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Dec 15 1867

Isoetes Braunii tenuifolia
in the bed of Tom's River, Ocean Co. N.J.
Parker & A Smith, Sept 16
1867

8 – 15 cells long
12 – 20 " wide

11 – 12.5 / 415 = 0.027 – 0.030 mm

Diam of macrospore
27.5 – 31.5 / 60 = 0.46 – 0.52

×10

Diam of leaves
6 – 9 m m

no stomata seen, even
in the point of the leaf

×2

numerous light brown
cells in sporangium
wall

×415

numerous
globules on macro-
sporangium, soaked

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13553

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Diam of Spores × 60

26 - 31.5 mm
60

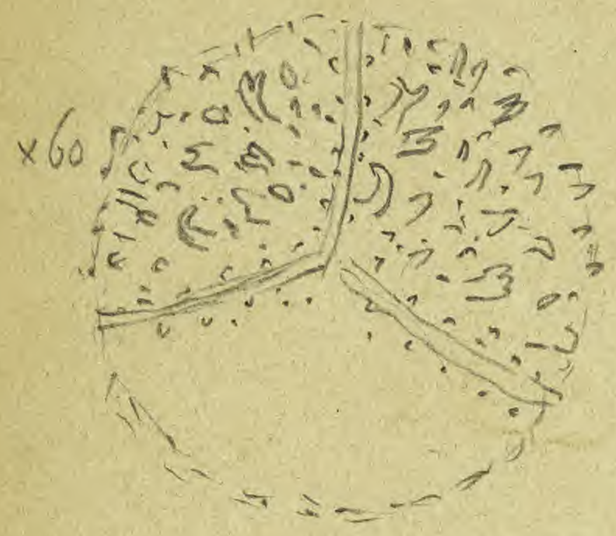
= 0.42 - 0.52

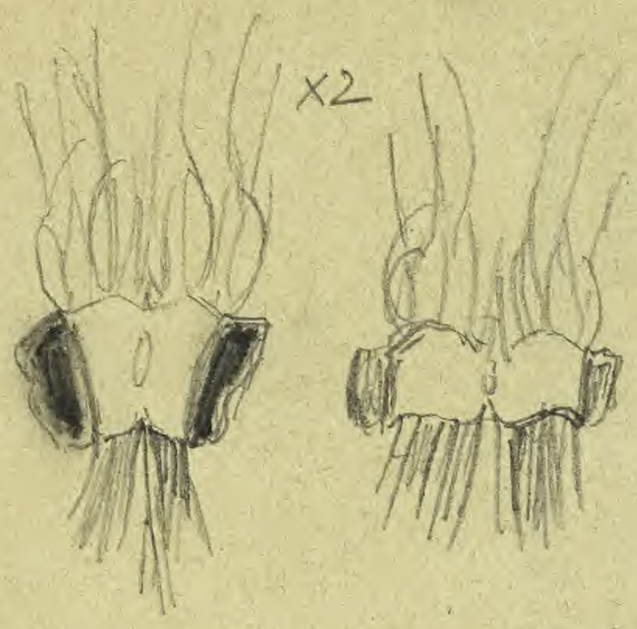
Isoetes Braunii
In the Lakelet half a mile from the Catskill Mountain house

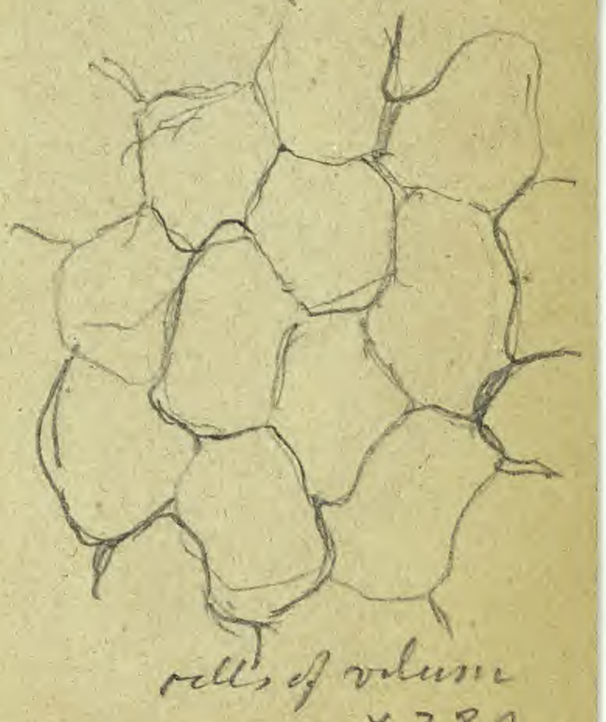
Sept 24 1866

Sept 19 1866

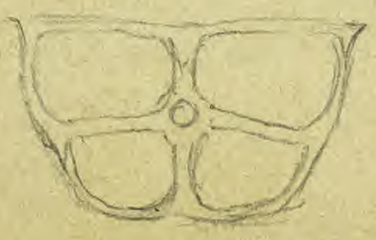
10-15 leaves
5 - 7 inches long
green, reddish towards tip
no stomata seen



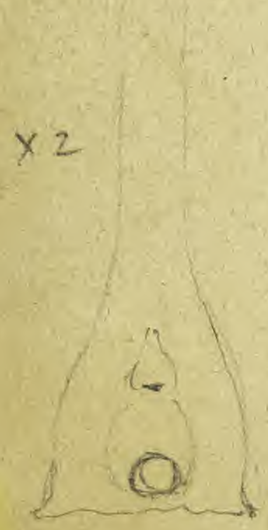


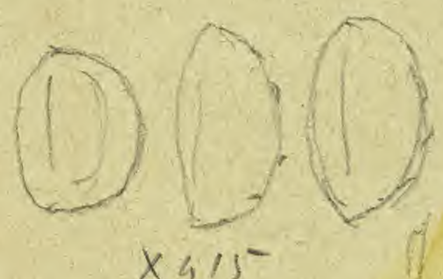


cells of volume
× 280



sect of leaf ×10





cells of sporangium
mostly Brown

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13554

ALEX. LEITCH

APOTHECARY & PHARMACEUTIST

COR. 4TH & OLIVE STS. ST. LOUIS

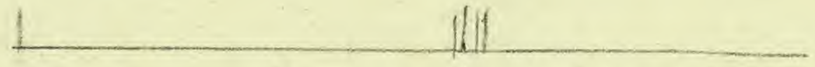
MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

0 cm 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

J Bruneau

Nov 21 1967

w. Bank — South side of Spy Pond — Sept 9 1969



small spores, true C delicate spindles most spores sterile

$\frac{27-29}{60} = 0.45-0.48$ mm

$\frac{11.5-14}{415} = 0.028-0.034$ mm

GEORGE ENGELMANN MEMORIAL HERBARIUM
Missouri Botanical Garden
HERBARIUM

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13555

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

D. echinospora
var
"Jack Lake" Carbon Co Pa

Dec 14 1867

Forster & Carey
Aug 7 1867

28-33 mostly 32 / 60 = 0.47-0.53 mostly 0.53

spinules from one spore ×150

from another one in same plant

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

13556

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Isoetes echinospora var. Braunii

Aug 15th 1867

"Big Lake" near Top of Pocono Mtn, Pa in sand, between large stones

Macrospore

×26–32 mostly 28/60 = 0.43–0.53 mm

mostly 0.45–0.48 mm diam

Microspores

×150

spinules reduced in some specimens very large in others

×150

11–12/415 = 0.027–0.029 mm

Wm. Canby Aug 6 1867

8–15 leaves

8–12 c.m long dark green, often reddish brown stout

sclerenchyma in cells of sporangium numerous but pale brown

×280

section of leaf of usual size

×60

spore on which the spinules are seen to be united in ridges, especially on vertex

×2

×10

×10 largest leaf

near point of leaf where stomata are found

median diaphragm usually extending across wide

13557

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
MISSOURI BOTANICAL GARDEN

Isoetes echinospora var Braunii

Moses-Lake on Toronto Mountain, Pennsylv. Aug 14 1867

Deeply submerged, growing singly between large stones

Isoetes in Canby Aug 6

16 leaves

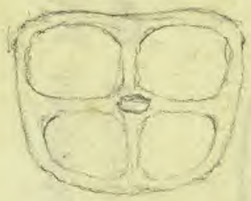
12 – 15 centim. long

other specimens smaller 5-7-10 c.m

$\frac{29-34}{60} = 0.48-0.57$ diam of the spores of an outer

$\frac{26-33}{60} = 0.43-0.55$ D. D. of an inner leaf of the same plant

×10



dissepiments nearly equal to walls – thickness

upper median consisting of 2–3 cell layers

Laterals of 2 – 9

Cortex or posterior median of 1–2 cell layers

no peripheral basal bundles

nor stomata seen except – thin point of leaf 1 inch from tip

×150 spindles of spores often confluent coarser or slenderer

sclerodermal cells of sporangium numerous but pale

microspores smooth

$\frac{11-13}{115} = 0.027-0.03k$ mm

×2

macrosporangi

male sporang

×2

very short stomata ×280

0 1 2 3 4 5 6 7 8 9 10 cm

copyright reserved

MISSOURI BOTANICAL GARDEN

13558

JONES & LEITCH
Druggists
Cor. Fifth & Market Sts. St. LOUIS, Mo.

J. McKittrick & Co 36 N Main St

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

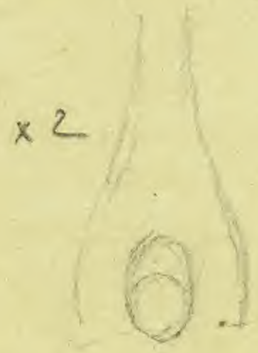
cm 0 1 2 3 4 5 6 7 8 9 10
MISSOURI BOTANICAL GARDEN
copyright reserved

Sporles echinospora
Brauni
Hastings, Canada West
near Belleville

Febr 18 1880

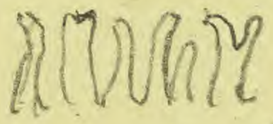
J. Macoun
July 12 1870

macrospores $\frac{25-32}{60}$ = 0.42 - 0.53 mm



x 2

volva Large



spinules of spore
x 150

stomata abundant

0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
MISSOURI BOTANICAL GARDEN

13559

Henry T. Rohlfing,

APOTHECARY.

No. 2600 Laclede Ave., S. W. Cor. Jefferson Ave.

ST. LOUIS, MO.

℞

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

cm 0 1 2 3 4 5 6 7 8 9 10
MISSOURI BOTANICAL GARDEN
copyright reserved